

ATTACHMENT 12

PARTICULATE GENERATION FACTORS

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CHEMICAL NAME	FORMULA	REACTION	SOLID PRODUCTS	GASEOUS PRODUCTS	POTENTIAL PARTICULATE (LB PART./LB FEED)
Aluminum Powder	Al	4Al + 3O ₂ ---> 2Al ₂ O ₃	Al ₂ O ₃	-	1.89
Ammonium Nitrate	NH ₄ NO ₃	2NH ₄ NO ₃ ---> 2N ₂ + O ₂ + 4H ₂ O	-	N ₂ , O ₂ , H ₂ O	0
Antimony Trisulfide	Sb ₂ S ₃	2Sb ₂ S ₃ + 9O ₂ ---> 2Sb ₂ O ₃ + 6SO ₂	Sb ₂ O ₃	SO ₂	0.86
Barium Carbonate	BaCO ₃	BaCO ₃ ---> BaO + CO ₂	BaO	CO ₂	0.78
Barium Chromate	BaCrO ₄	2BaCrO ₄ ---> 2BaO + 2CrO ₂ + O ₂	BaO, CrO ₂	O ₂	0.94
Barium Nitrate	Ba(NO ₃) ₂	2BaN ₂ O ₆ ---> 2BaO + 4NO ₂ + O ₂	BaO	NO ₂ , O ₂	0.59
Barium Peroxide	BaO ₂	2BaO ₂ ---> 2BaO + O ₂	BaO ₂	O ₂	0.91
Barium Stearate	Ba(C ₁₈ H ₃₅ O ₂) ₂	BaC ₃₆ H ₇₀ O ₄ ---> BaO+36CO ₂ +35H ₂ O+86.5O ₂	BaO	CO ₂ , H ₂ O, O ₂	0.22
Black Powder					
Charcoal(75%)	C	C + O ₂ ---> CO ₂	-	CO ₂	0
Sulfur(10%)	S	S + O ₂ ---> SO ₂	-	SO ₂	0
Potassium Nitrate(15%)	KNO ₃	4KNO ₃ ---> 2K ₂ O + 4NO ₂ + O ₂	K ₂ O	NO ₂ , O ₂	0.47
Boron	B	4B + 3O ₂ ---> 2B ₂ O ₃	B ₂ O ₃	-	3.22
Calcium Carbonate	CaCO ₃	CaCO ₃ ---> CaO + CO ₂	CaO	CO ₂	0.56
Calcium Silicide	CaSi ₂	2CaSi ₂ + 5O ₂ ---> 2CaO + 4SiO ₂	CaO, SiO ₂	-	1.83
Calcium Resinate		Organic with calcium; assume all is calcium and products are CaO			1.00
Calcium Stearate	Ca(C ₁₈ H ₃₅ O ₂) ₂	CaC ₃₆ H ₇₀ O ₄ + 52O ₂ ---> CaO + 36CO ₂ + 35H ₂	CaO	CO ₂ , H ₂ O	0.09
Carborundum	SiC	No Reaction (pg. 642, ref.1)	SiC	-	1.00
Copper Powder	Cu	2Cu + O ₂ ---> 2CuO	CuO	-	1.25
Dichromated Aluminum	AlCr ₂ O ₂	4AlCr ₂ O ₂ + 3O ₂ ---> 2Al ₂ O ₃ + 8CrO ₂	Al ₂ O ₃ , CrO ₂	-	1.34
Ground Glass	-	No Reaction	glass	-	1.00
Lead	Pb	2Pb + O ₂ ---> 2PbO	PbO	-	1.08

PARTICULATE GENERATION FACTORS (Continued)

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Lead Azide	Pb(N ₂) ₃	PbN ₆ + 6.5O ₂ ---> PbO + 6NO ₂	PbO	NO ₂	0.77
Lead Oxide	PbO	No Reaction	PbO	-	1.00
Lead Nitrate	Pb(NO ₃) ₂	Pb(NO ₃) ₂ + H ⁺ -----> PbO + 2NO ₂ + H ₂ O	PbO	NO ₂ , H ₂ O	0.67
Lead Styphnate	PbC ₆ HN ₃ O ₈	PbC ₆ HN ₃ O ₈ +O ₂ --->PbO+CO ₂ +NO ₂ +H ₂ O	PbO	CO ₂ , NO ₂ , H ₂ O	0.50
Lead Thiocyanate	Pb(SCN) ₂	PbS ₂ C ₂ N ₂ + O ₂ ---> PbO + SO ₂ + CO ₂ + NO ₂	PbO	CO ₂ , NO ₂ , SO ₂	0.69
Magnesium/Aluminum	Mg	5Mg + O ₂ + N ₂ ---> 2MgO + Mg ₃ N ₂	MgO, Mg ₃ N ₂	-	1.49
	Al	4Al + 3O ₂ ---> 2Al ₂ O ₃	Al ₂ O ₃	-	1.89
Magnesium	Mg	5Mg + O ₂ + N ₂ ---> 2MgO + Mg ₃ N ₂	MgO, Mg ₃ N ₂	-	1.49
Nickel	Ni	2Ni + O ₂ ---> 2NiO	NiO	-	1.27
Potassium Chlorate	KClO ₃	KClO ₃ + 5H ⁺ ---> KOH + HCl + 2H ₂ O	KOH	HCl, H ₂ O	0.46
Potassium Nitrate	KNO ₃	KNO ₃ + H ⁺ ---> KOH + NO ₂	KOH	NO ₂	0.55
Potassium Perchlorate	KClO ₄	KClO ₄ + 8H ⁺ ---> KOH + HCl + 3H ₂ O	KOH	HCl, H ₂ O	0.40
Potassium Sulfate	K ₂ SO ₄	K ₂ SO ₄ + 3H ⁺ + O ₂ ---> 2KOH + H ₂ SO ₄	KOH	H ₂ SO ₄	0.71
Red Phosphorus	P	4P + 3O ₂ ---> P ₄ O ₆	P ₄ O ₆	-	1.77
Selenium	Se	Se + O ₂ ---> SeO ₂	SeO ₂	-	1.41
Silicon Carbide	SiC	No Reaction (pg. 642, ref.1)	SiC	-	1.00
Sodium Oxalate	NaC ₂ O ₄	2NaC ₂ O ₄ + O ₂ ---> 2Na ₂ O + 4CO ₂	Na ₂ O	CO ₂	0.56
Sodium Resinate		Organic with sodium; assume all is sodium and products are Na ₂ O	Na ₂ O	-	1.00
Sodium Sulfate	Na ₂ SO ₄	Na ₂ SO ₄ ---> Na ₂ O + SO ₂ + 0.5O ₂	Na ₂ O	SO ₂	0.44
Strontium Nitrate	Sr(NO ₃) ₂	2Sr(NO ₃) ₂ +6H ⁺ +O ₂ --->2Sr(OH) ₂ +4HNO ₃	Sr(OH) ₂	HNO ₃	0.57
Strontium Oxalate	SrC ₂ O ₄ H ₂ O	2SrC ₂ O ₄ H ₂ O+O ₂ --->2Sr(OH) ₂ +4CO ₂ +2H ₂ O	Sr(OH) ₂	CO ₂ , H ₂ O	0.63

PARTICULATE GENERATION FACTORS (Continued)

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Strontium Peroxide	SrO ₂	SrO ₂ + 3H ⁺ ---> Sr(OH) ₂ + H ₂ O	Sr(OH) ₂	H ₂ O	1.02
Sulfur	S	S + O ₂ ---> SO ₂	-	SO ₂	0
Tin	Sn	Sn + O ₂ ---> SnO ₂	SnO ₂	-	1.27
Tin Dioxide	SnO ₂	No reaction	SnO ₂	-	1.00
Zinc Stearate	Zn(C ₁₈ H ₃₅ O ₂) ₂	ZnC ₃₆ H ₇₀ O ₄ + 52O ₂ ---> ZnO+36CO ₂ +35H ₂	ZnO	CO ₂ , H ₂ O	0.13
Zirconium Dioxide	ZrO ₂	No reaction	ZrO ₂	-	1.00
Zirconium/Nickel	Zr/Ni	Zr + 2Ni + 2O ₂ ---> ZrO ₂ + 2NiO	ZrO ₂ , NiO	-	1.35
Zirconium	Zr	Zr + O ₂ ---> ZrO ₂	ZrO ₂	-	1.35